

No. 2014-1730

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CORNING INCORPORATED

Appellant,

v.

DSM IP ASSETS B.V.

Appellee.

On Appeal From The United States
Patent & Trademark Office Patent Trial
And Appeal Board No. IPR2013-00045

BRIEF OF APPELLEE DSM IP ASSETS B.V.

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Form 9

FORM 9. Certificate of Interest**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**Corning Incorporated v. DSM IP Assets B.V.No. 14-1730**CERTIFICATE OF INTEREST**

Counsel for the (petitioner) (appellant) (respondent) (appellee) (amicus) (name of party)

DSM IP Assets B.V. certifies the following (use "None" if applicable; use extra sheets if necessary):

1. The full name of every party or amicus represented by me is:

DSM IP Assets B.V.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

DSM IP Assets B.V.; DSM Desotech Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

DSM N.V.4. ☒ The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:Sharon A. Israel, Joseph A. Mahoney, Erick J. Palmer and Kyle E. Friesen of Mayer Brown LLP9/5/14

Date

/s/ Sharon A. Israel

Signature of counsel

Sharon A. Israel

Printed name of counsel

Please Note: All questions must be answered

cc: _____

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STATEMENT OF RELATED CASES

Pursuant to Federal Circuit Rule 47.5, DSM IP Assets B.V. (“DSM”) provides this statement of related cases.

No other appeal in or from the same proceeding before the Patent Trial and Appeal Board (“Board”) was previously before this or any other appellate court. In addition, no other appeal in or from any proceeding involving the U.S. Patent No. 6,339,666 (the “666 patent”) was previously before this or any other appellate court.

The following cases are known to counsel to be pending in this or any other court that will directly affect or be directly affected by this Court’s decision in the pending appeal:

1. Appeal No. 15-1068 before this Court is an appeal from IPR2013-00049 before the Board involving U.S. Patent No. 6,298,189 (the “189 patent”), which issued from the immediate parent application of the ’666 patent. Appeal No. 15-1068 and this case have been designated companion cases, and there is overlap between the issues in that case and this one.

2. Appeal Nos. 15-1069 and -1070 before this Court are an appeal and cross-appeal from IPR2013-00048 before the Board involving the '189 patent. Appeal Nos. 15-1069 and -1070 and this case have been designated companion cases, and there is overlap between the issues in those appeals and this one.
3. *Corning Incorporated v. DSM Desotech, Inc. and DSM IP Assets B.V.*, Civil Action No. 14-cv-01081 before the United States District Court for the District of Delaware involves claims relating to the '666 patent and the '189 patent.
4. *DSM Desotech, Inc. and DSM IP Assets B.V. v. Corning Incorporated*, Civil Action No. 14-08111 before the United States District Court for the Northern District of Illinois involves claims relating to the '666 patent and the '189 patent.

JURISDICTIONAL STATEMENT

DSM IP Assets B.V. agrees with Corning's Jurisdictional Statement, except to the extent this appeal relates to the Board's decision to deny cancellation of claims 1-3, 8, 10-12, and 16-18 of the '666 patent. On October 15, 2014, DSM filed a statutory disclaimer with the United States Patent and Trademark Office as to claims 1-3, 8, 10-12, and 16-18, which rendered moot the appeal from the Board's decision as to those claims.

STATEMENT OF THE ISSUES

1. Whether substantial evidence supports the Board's determination that Corning failed to show by a preponderance of the evidence that either the Szum or Shustack reference inherently discloses coatings satisfying the claimed adhesion property, as required by every claim of the '666 patent.
2. In the alternative, whether substantial evidence supports the Board's determination that Corning failed to show by a preponderance of the evidence that either the Szum or Shustack reference inherently discloses coatings satisfying the claimed adhesion property, as required by every claim of the '666 patent, under any reasonable construction of the claimed adhesion property.

STATEMENT OF THE CASE

Corning's Statement of the Case includes factual allegations and argument. DSM provides this alternative Statement of the Case, and addresses factual allegations and argument in the appropriate sections of this Brief.

This is an appeal from the decision of the Patent Trial and Appeal Board (the "Board") denying Corning's petition to cancel claims 1-20 of U.S. Patent No. 6,339,666 (the "666 patent").

DSM IP Assets B.V. is the owner by assignment of the legal rights in and to the '666 patent. On November 15, 2012, Corning filed a petition for *inter partes* review of the '666 patent based on anticipation by or obviousness over Published PCT Application WO 95/15928 to Szum ("Szum"),¹ U.S. Patent No. 5,352,712 to Shustack ("Shustack"), U.S. Patent No. 5,219,896 to Coady et al. ("Coady"), and U.S. Patent No. 4,900,126 to Jackson et al. ("Jackson"). A131, A141-42.

¹ Because of the informal consolidation of discovery between parallel proceedings before the Board, the record may contain references to "Szum '15928," which was used in related proceedings IPR2013-00048 and IPR2013-00049 to distinguish between references. "Szum '15928" also refers to Published PCT Application WO 95/15928, which is identified as "Szum" in this Brief and most of the record before the Board.

On May 13, 2013, after DSM filed a preliminary response, the Board instituted trial on Corning's petition for some, but not all, grounds raised, as shown by the following table:

Grounds	Claims	Institution Decision
Anticipation – Szum	10-20	Granted
Obviousness – Szum	10-20	Granted
Obviousness – Szum (with Coady)	1-9	Denied as redundant
Obviousness – Szum (with Shustack)	1-9	Granted
Anticipation – Shustack	1-2, 8, 10-11, 16-17, and 19	Granted
Obviousness – Shustack	1-2, 8, 10-11, 16-17, and 19	Granted
Obviousness – Coady	1-2, 8	Denied as redundant
Obviousness – Shustack (with Jackson)	3, 12, 18, and 20	Granted
Obviousness – Coady (with Jackson)	3	Denied as redundant

A268-69, A288-89.

The parties were involved in ten co-pending *inter partes* review proceedings, which the Board handled in parallel without ever formally consolidating. *See, e.g.*, A317-19 (entering an order in all ten cases addressing issues common to all of the cases, such as DSM's request for discovery, and issues unique to some of the ten cases, such as Corning's requests for rehearing; prohibiting the parties from using a heading

listing all ten cases on one paper). The Board also consolidated all of the cases for oral argument in a single hearing. *See* A739.

The Board issued its Final Written Decision on May 9, 2014, denying Corning's petition to cancel claims 1-20 of the '666 patent. A1, A3, A22. The Board, in its Final Written Decision, also denied DSM's motion to amend without prejudice to DSM's right to file a disclaimer or reissue. A3, A20, A22.

On October 15, 2014, DSM filed a disclaimer with the United States Patent and Trademark Office (the "USPTO"), disclaiming claims 1-3, 8, 10-12, and 16-18 of the '666 patent.² Accordingly, the grounds asserted against the remaining claims are as follows: (i) anticipation or obviousness based on Szum alone for claims 13-15, 19, and 20; (ii) obviousness based on Szum in view of Shustack for claims 4-7 and 9; (iii) anticipation or obviousness based on Shustack alone for claim 19; and (iv) obviousness based on Shustack in view of Jackson for claim 20.

Corning filed its notice of appeal from the Board's Final Written Decision on July 8, 2014. *See* A72.

² The disclaimer is publicly available in the image file wrapper in the USPTO's Patent Application Information Retrieval (PAIR) system.

STATEMENT OF FACTS

I. The State of the Art to Which the '666 Patent Relates

The '666 patent issued on January 15, 2002, from an application filed on April 20, 2001, and it claims priority through a chain of continuation and continuation-in-part applications to an application filed on November 8, 1996. *See* A24, A37 at col. 1:8-18.

Exemplary claim 13 (and disclaimed claim 10, from which it depends) recites as follows, with relevant claim language indicated by emphasis:

13. The composition of claim 10, wherein said oligomer further comprises a polyether polyol residue.

10. A composition for coating an optical fiber, said composition comprising an oligomer having an aliphatic diisocyanate residue and at least one functional group capable of polymerizing under the influence of radiation, said composition after radiation cure having the combination of properties of:

(a) a fiber pull-out friction of less than 40 g/mm at 90° C.;

- (b) a crack propagation of greater than 1.0 mm at 90° C.;
- (c) a glass transition temperature of -20° C. or less; and
- (d) sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling.

A70 at col. 68:34-45, 57-58 (emphasis added). The Board refers to limitation (d) as the “claimed adhesion property.” A6-A7.

A. The Background of the Technology

The '666 patent generally relates to special purpose coating compositions used to protect the optical glass fibers used in telecommunications networks. *See* A973-974 ¶¶ 10-12; A3638 ¶ 20. Coating compositions like the ones in the '666 patent are generally used in combinations of two coatings: a soft inner primary coating and a hard outer primary coating.³ *See* A975 ¶¶ 14-15. The inner primary coating layer directly contacts and surrounds the glass of the fiber; the outer

³ The inner primary coating is sometimes referred to as the primary coating; the outer primary coating is sometimes referred to as the secondary coating. A975 ¶ 14 and Figure.

primary coating layer, in turn, surrounds and directly contacts the inner primary coating layer. *Id.* ¶ 14.

Optical glass fibers can be combined into ribbons of multiple coated fibers using polymeric matrix materials. A3638 ¶ 21. Around the time of the invention, the use of these ribbons was growing. *Id.* The fiber optic network was growing, too, as public use of the Internet expanded and web browsers became more widely available. *Id.*

As new fiber was installed to expand a network, it had to be spliced to the existing fiber network. A3639 ¶ 22. Before being spliced, the ribbons had to be stripped of their coatings to expose the bare fiber. *Id.* The stripping operation is performed in the field using a specialized tool that clamps on a section of fiber and heats the coatings until they become soft. *Id.* The operator then removes the coatings. *Id.*

At the time of the invention, there was a need to provide coatings that could be stripped easily and cleanly from their optical glass fibers. A3639-40 ¶ 24. That need had to be balanced, however, against other priorities, such as the durability and stability of the coating compositions under the conditions to which they would be exposed. A3640 ¶ 25. Among the conditions coated optical fibers must endure is

immersion in water for extended periods of time. *Id.* The '666 patent teaches several components and chemical structures that can improve ribbon stripping performance while preserving the adhesion of the coating to the glass fiber, even where the fiber is submerged in water or subjected to other field conditions. A3643 ¶ 29.

B. The Importance of Preventing Delamination

All of the claims of the '666 patent recite an inner primary coating for coating an optical glass fiber that exhibits, after radiation cure, “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling.” A70 at col. 68:2-4, 43-45 (independent claims 1 and 10); *see* A70-71 at col. 68:5-70:5 (dependent claims 2-9 and 11-20 all depending directly or indirectly from claim 1 or 10). Delamination, as relevant here, is the separation of an inner primary coating from the surface of a glass substrate that results from the breakdown of the adhesive bonds between the coating and the glass. *See, e.g.,* A40 at col. 8:64-67 (“[T]he adhesive force between the inner primary coating and the surface of the optical glass fiber must be broken to delaminate the inner primary coating from the surface of the optical glass fiber.”). For example, delamination occurs during the

stripping process as the coatings are removed from the glass fiber. *See* A41 at col. 9:42-10:9 (describing how coating layers should adhere to each other when an inner primary coating layer is delaminated from an optical glass fiber). Under normal operating conditions, however, “[d]elamination of the inner primary coating from the optical glass fiber” is undesirable because it “can lead to degraded strength of the optical glass fiber as well as signal transmission attenuation disadvantages.” A37 at col. 2:54-57.

As relevant to this appeal, there are two forces that can cause undesirable delamination of an optical fiber coating. When water permeates the coating, hydrodynamic forces cause chemical reactions at the coating-glass interface that break the chemical bonds between the inner primary coating and the glass of the fiber. A3653-54 ¶¶ 52-53. The chemical process whereby water breaks down these bonds is called hydrolysis. *See* A3653-54 ¶¶ 52, 53 (referring to the water-based reactions at coating-glass interface as “hydrolysis”). Mechanical forces can also cause separation of the coating from the glass. *See* A3426 at 459:16-18 (describing test procedure as applying a “mechanical force” to pull a film of coating from a substrate).

The '666 patent teaches that coatings of the invention should be able to withstand each of these forces without delaminating. In addressing one attempted prior art solution the '666 patent explains, “any reduction in the adhesion between the inner primary coating and the optical glass fiber increases the possibility of such undesirable delamination, especially in the presence of moisture.” Regarding another attempted prior art solution described in the '666 patent that used a “soft silicone coating is easily peeled from the surface of the optical glass fibers by finger pressure,” the specification explains that the ease of peeling under “finger pressure” demonstrates that the coating “has insufficient adhesion to the surface of the optical glass fibers to prevent delamination during most uses.” The claims of the '666 patent reflect this improvement, reciting a claimed coating having “sufficient adhesion . . . to prevent delamination in the presence of moisture and during handling.” A70 at col. 68:2-4, 43-45 (emphasis added).

C. Test Methods Relating to Delamination and Adhesion

The '666 patent describes testing for “resistance to delamination” by means of a “Water Soak Delamination Test.” A50 at col. 27:29-32.

Accord A12. In this test procedure, a film of inner primary coating is cured on a glass microscope slide and covered with a film of cured outer primary coating. A50 at col. 27:33-41. *Accord* A11. The sample is then immersed in deionized water under heated conditions and periodically observed for delaminations. A50 at col. 27:42-47. *Accord* A12.

The '666 patent describes subjecting two sets of coatings to water soak delamination testing. *See* A50, Table 2; A51, Table 3. *Accord* A12. In the results disclosed in Table 2, the '666 patent describes one example coating that delaminated “[a]fter 1 hour at 60°C” in a hot water soak. A50 at col. 28:15-19 (results for “Comp. Ex B-2”). *Accord* A12. This example is described as having improved results in a pull-out test, “but only at the expense of hydrolytic interfacial adhesion.” *Id.* at 28:31-35. In contrast, another example did not delaminate, *id.* at col. 28:15-19 (results for “Ex. 2-1”); *accord* A12, and is described as having improved results “but not at the expense of hydrolytic interfacial adhesion.” *Id.* at 28:36-39.

Table 3 discloses results in a similar manner. Three of the four coatings for which test results are disclosed in Table 3 report delamination after some period of time. *See* A51 at col. 29:52-59.

Accord A12. One of the coatings, however, did not delaminate at all during the reported test period. *See* A51 at col. 29:53-59 (reporting “No Delamination After 24 Hours”). *Accord* A12.

Corning’s and DSM’s experts both explained how water soak delamination testing evaluates a coating’s resistance to delamination from hydrodynamic forces (*i.e.*, hydrolysis). Dr. Winningham, Corning’s employee expert, testified that “one could perform a water delamination test if one was concerned about the ability of a coating to delaminate from a substrate when the film is exposed to water.” A3426 at 460:8-11. And Dr. Taylor, DSM’s expert, explained that “the results of a 60°C water soak delamination test are largely determined by the resistance of the adhesive bonds to hydrolysis.” A3652 ¶ 51. *Accord* A15 (discussing testimony from Dr. Taylor and Dr. Winningham).

The ’666 patent also describes methods for measuring an adhesion value after conditioning at 50% relative humidity (“RH”) and at 95% RH, *see generally* A50-51 at col. 28:57-29:26, which are conducted “[i]n addition” to the water soak delamination test. A50 at col. 28:53-56. *Accord* A13. Again, samples of the coating compositions being evaluated are cured on glass microscope slides. A50 at col. 28:58-65.

The samples are conditioned at 50% RH for a week for “dry” testing using a portion of the film, A50-51 at col. 28:66-29:2, and the remaining portion is further conditioned at 95% RH for a day for “wet” testing. A51 at col. 29:2-5. *Accord* A10. Films that “appeared to be uniform and free of defects” are cut into six-by-one inch samples, the last inch of which is peeled off the glass plate. A51 at col. 29:13-17. *Accord* A11. The peeled-up portion is attached to a wire and pulley mechanism, which is connected to the testing instrument, and the instrument is then activated and a force is measured. A51 at col. 29:17-25. *Accord* A11. Experts for both parties referred to this kind of testing as a “peel test.” *See* A3284 at 57:19-58:5, 58:18-59:12 (classifying the “wet adhesion test related to the IPRs here” as a peel test with specific conditions); A3656 ¶ 61 (referring to the test on which Dr. Winningham relied as a “peel test”); *see also* A15 (noting Dr. Winningham’s use of the phrase “peel test” with regard to the “wet adhesion test”).

Unlike the water soak delamination test, which evaluates resistance to delamination due to hydrolysis, a peel test measures the resistance of the coating-glass bonds to a mechanical force applied to the coating. A3654 ¶ 53; *see also* A3426 at 459:3-18 (explaining that a

peel test differs from a water delamination test because the peel test involves “applying . . . a mechanical force to a film and pulling the film off a substrate”). *Accord* A15. At deposition, Dr. Winningham testified about the differences between a peel test and water delamination test:

Q. If one was concerned about the ability of a coating to delaminate from a substrate when exposed to water, would performing a peel test not give sufficient information to satisfy the interested person?

A. **I think those tests measure — are looking at different things or measuring different things**, so I’m not sure if — I can’t say categorically that a peel test is going to tell you what’s going to happen in a water delamination test. **Different tests.**

A3426 at 460:12-21 (emphasis added). *Accord* A15. Because the tests measure different properties, a peel test cannot predict the outcome of a water soak delamination test. *See* A3426 at 460:17-25 (testifying Dr. Winningham could not “say categorically” or “predict with absolute certainty” from a peel test what the results of a water delamination test would be); A3652 ¶ 51 (“[T]he results of a peel test are not sufficient to predict the outcome of a 60°C water soak delamination test.”).

II. *Inter Partes* Review Proceedings Before the Board

A. Corning's Petition

In its petition, Corning asserted that claims 1-20 were unpatentable based on Szum and Shustack, alone or in combination with each other or other references.⁴ Specifically, Corning argued in part that the property limitations recited in independent claims 1 and 10 were present in two inner primary coatings from the cited references: Example 5B of Szum and Example I of Shustack. A153-54; A158; A166-67; A175; A179; A185.

Corning also argued that the property limitation common to both claims 19 and 20, the “change in length” when heated limitation, was present in combinations of Szum Example 5B or Shustack Example I with one of several outer primary coatings: Example 2 of Szum or Examples IX, X, or XI of Shustack. A157; A178; A188. While the Board’s decision in this case did not address this limitation, the Board did address it in two related cases—IPR2013-00048 and IPR2013-00049—and found Corning’s evidence insufficient to show the limitation was inherently disclosed by the cited references.

⁴ As noted in the Statement of the Case, *supra*, Corning also asserted grounds of unpatentability based on Coady, on which trial was not instituted and which are therefore not discussed further.

In support of these arguments, Corning presented evidence in the form of two declarations. In a declaration from Ms. Inna Kouzmina, a Corning employee, Corning presented evidence that the inner and outer primary coatings of Szum and Shustack were prepared and tested for various properties. *See generally* A1071-94. Dr. Michael Winningham, another Corning employee, submitted a declaration in which he relied on the testing results describe by Ms. Kouzmina in her declaration to reach conclusions on the ultimate issues of anticipation and obviousness. A967; A994-1004 ¶¶ 59-79; A1009-15 ¶¶ 95-96 (including claim chart); A1032-37 ¶ 118 (including claim chart); A1042-51 ¶¶ 129-30 (including claim chart); A1061-66 ¶ 147 (including claim chart).

In its petition, Corning asserted that the phrase “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling” was “not specifically defined in the ’666 patent,” A151 (citing A1005 ¶ 82), but took no position on the proper construction of the phrase. *See id.* Dr. Winningham likewise proposed no construction for the phrase in his initial declaration. *See* A1005 ¶ 82. Dr. Winningham testified, however, that the adhesion to glass values Corning obtained meant that Szum Example 5B and Shustack

Example I “would have sufficient adhesion to the glass fiber to prevent delamination in the presence of moisture and during handling.” A1007 ¶ 88; A1039 ¶ 124.

At deposition, Dr. Winningham admitted that he did not recall ever considering whether the phrase “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling” refers to the water soak delamination test disclosed in the ’666 patent. A3431 at 479:7-13. Dr. Winningham was not aware of any water soak delamination tests performed by Corning for the related IPR proceedings, A3432 at 481:10-13, though he admitted that the results of such a test would be important if the Board construed to the claims as referring to that procedure. A3431-32 at 480:17-481:4.

B. DSM’s Patent Owner’s Response and Motion to Amend

In its Patent Owner’s Response, DSM argued that, “under the broadest reasonable interpretation, the term ‘sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling’ requires at least a ‘no delamination’ result in a water soak test as described in the ’666 patent.” A500. DSM supported this position with the declaration testimony of its expert Dr. Carl Taylor,

A3650-54 ¶¶ 46-53, and the deposition testimony of Dr. Winningham. *See id.* ¶¶ 47, 51 (discussing Dr. Winningham’s deposition testimony); A500 (citing A3426 at 460:12-25).

Dr. Taylor testified, in part, that “[a] person of ordinary skill in the art would understand the phrase ‘in the presence of moisture’ to refer to the fiber being exposed to liquid water.” A3650 ¶ 47. He also testified that a water soak delamination test measures “resistance of the coating-glass bonds to hydrolysis and other chemical processes that occur in the presence of water” while “a peel test measures the resistance of those bonds to a mechanical force applied to the coating.” A3654 ¶ 53.

Because Corning submitted only results from peel tests and not water soak delamination tests, DSM argued that Corning’s evidence was insufficient to show that the prior art coatings “necessarily satisf[y] the ‘delamination’ limitation of independent claims 1 and 10 and dependent claims 2-9 and 11-20.” A507-08. DSM’s argument was supported by declaration testimony from Dr. Taylor. A3656-59 ¶¶ 61-65.

In addition, DSM submitted evidence of its own that it formulated Szum Example 5B, A3654-55 ¶¶55-57 (Declaration of Dr. Taylor); A3751-59 ¶¶ 77-95 (Declaration of Prof. Christopher Bowman); *see also* A4600 ¶ 3 (second Declaration from Prof. Bowman, accompanying Reply in support of Motion to Amend); A4603-10 ¶¶ 12-23 (same), and that Szum Example 5B delaminated within 24 hours when subjected to a water soak delamination test. A3659-60 ¶¶ 66-69; A4592-97.

DSM also submitted a motion to amend claims 1 and 10 by substituting proposed new claims 21 and 22. A526-27. Those proposed claims added a chemical structure limitation and incorporated DSM's proposed claim construction. *Id.*

C. Corning's Reply and Oral Argument

In its Reply to DSM's Patent Owner Response, Corning disagreed with DSM's construction that "in the presence of moisture" required exposure to liquid water. A622-23. Corning also responded that "Corning's wet adhesion test results are relevant to determining adhesion of a coating and prevention of delamination in the presence of moisture." A624 (emphasis added) (citing A2105 ¶ 19).

At oral argument before the Board, Corning bootstrapped Dr. Winningham's testimony about the asserted relevance of its test evidence into alleged testimony about claim construction. *See* A850-51 at 7:22-8:11 (admitting that Dr. Winningham's testimony did not address "how a skilled artisan would construe [the relevant] portion of the claim"). Corning asserted that "[t]he claim language is so broad . . . that in our view it encompasses a wet adhesion test." A852 at 9:7-9. When pressed, however, Corning's counsel was unable to identify any threshold wet adhesion value that would be "sufficient" under the claims. *See* A852-53 at 9:21-10:21 (Corning's counsel responding to questions about what value Corning asserts would be sufficient without providing any such value). Instead of providing a wet adhesion value that would be sufficient, Corning argued (for the first time) that Table 3 in the '666 patent supported the conclusion that there was a correlation between its 95% RH adhesion test results and water soak delamination test results. A853 at 10:11-21; *see* A15-16 (noting that this argument was raised for the first time at oral argument).

D. The Board's Decision

In its final written decision, the Board set forth its finding that Corning had failed to show unpatentability of claims 1-20 by a preponderance of the evidence. A21. The Board had two independent reasons for this finding. A17.

The first reason the Board provided relied on its claim construction of the term “moisture.” The Board agreed with DSM that “the inventors used [the term “moisture”] in its ordinary sense to refer to liquid water.” A8. Accordingly, by reciting “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling,” which the Board called the “claimed adhesion property,” the claims required a coating that would not delaminate when exposed to liquid water. *Id.*

Based on this construction, the Board turned to “[a] dispositive question”: “Does Corning show by a preponderance of the evidence that the Szum coating exhibits sufficient adhesion to prevent delamination from glass in the presence of liquid water?” A10. The Board said no. *Id.*

The Board then considered the evidence regarding the property measured by each of the two proposed tests. Based on the evidence of record, the Board found “that the wet adhesion test assesses the mechanical force required to peel a cured coating away from a glass substrate, after conditioning the coating at 95% relative humidity.” A11. The Board found, on the record before it, that “the water soak delamination test assesses the ability of a cured coating to withstand the hydrodynamic forces that cause delamination of a cured coating from a glass substrate in the presence of liquid water.” A12. Because the “wet adhesion test” or “peel test” did not involve exposing the coatings from the cited references to liquid water, the Board found Corning’s evidence insufficient to meet its burden. A12-14.

The Board then turned to its second, independent reason for finding that Corning did not prove unpatentability by a preponderance of the evidence. The Board found that Corning had not shown “that the results of a 95% relative humidity wet adhesion test correspond to an ability to withstand the hydrodynamic forces that effect delamination.” A14. The Board gave Dr. Winningham’s petition testimony little weight because it was unsupported by objective evidence and found Dr.

Winningham's deposition testimony and Dr. Taylor's declaration consistently described the differences between a peel test and a water soak delamination test. A14-15. The Board also considered Corning's argument at the oral hearing regarding Table 3 in the '666 patent. A15-16. The Board deemed Corning to have waived the argument, but also considered it unpersuasive on the merits because it was unsupported by "convincing, objective evidence." A16.

The Board applied the same reasoning to the asserted grounds of unpatentability relying on both Szum and Shustack. *See generally* A9-18 (addressing Szum); A18-19 (summarily addressing Shustack with reference to the prior analysis).

Finally, the Board denied DSM's motion to amend "without prejudice to the filing of a disclaimer." A20. On October 15, 2014, DSM filed a disclaimer with the USPTO disclaiming claims 1-3, 8, 10-12, and 16-18 of the '666 patent.

SUMMARY OF ARGUMENT

The Board properly rejected Corning's evidence as unpersuasive and lacking objective support, and substantial evidence supports its finding that Corning failed to show the alleged unpatentability of

claims 1-20 of the '666 patent. Corning focuses much of its argument on what it wrongly deems a matter of claim construction—whether its test evidence showed the alleged inherent properties of the prior art. That argument conflates the issue of claim construction with the sufficiency of the evidence Corning submitted to the Board.

The Board's final written decision in this case rests, not on any given claim construction, but on two of its factual findings relating to whether the alleged prior art inherently discloses coating compositions possessing the claimed adhesion property. First, a 95% relative humidity ("RH") adhesion test measures the mechanical force required to peel a film of cured coating from a glass substrate. Second, Corning failed to prove any correlation between the 95% RH adhesion test and the ability to resist delamination from hydrodynamic forces. These findings are supported by overwhelming evidence, including testimony from both parties' expert witnesses, and Corning makes no effort to show otherwise.

Moreover, there is no reasonable claim construction under which Corning can prevail in the face of these findings of fact. The Board's decision was supported by substantial evidence under any construction

of the term “moisture,” and may be affirmed without addressing Corning’s arguments to its meaning. In addition, the Board correctly construed “moisture” to have its ordinary and customary meaning of “liquid water.” The Board properly rejected Corning’s arguments regarding both claim construction and the sufficiency of its evidence, and its decision as to the non-disclaimed claims should be affirmed.

STANDARD OF REVIEW

Factual findings by the Board should be upheld as long as they are supported by substantial evidence. *In re Gartside*, 203 F.3d 1305, 1313-14 (Fed. Cir. 2000). Anticipation is a question of fact. *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (1991). The ultimate issue of obviousness is a question of law reviewed de novo, but it is predicated on underlying questions of fact, *Gartside*, 203 F.3d at 1316, including “the scope and content of the prior art.” *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966). Whether any claim element is disclosed by a reference is a question of fact. *See Med. Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1221 (Fed. Cir. 2003) (“The question of what a reference

teaches and whether it describes every element of a claim is a question for the finder of fact.”).

The USPTO’s interpretation of its own regulations is “controlling unless plainly erroneous or inconsistent with the regulation.” *Auer v. Robbins*, 519 U.S. 452, 461 (1997) (internal quotation marks omitted).

Claim construction determinations by the Board are reviewed de novo, applying the same “broadest reasonable interpretation” standard the Board applies. *In re Abbott Diabetes Care Inc.*, 696 F.3d 1142, 1148 (Fed. Cir. 2012). To the extent claim construction involves any underlying factual findings, the Board is entitled to at least as much deference—and probably more due to its technical expertise—as district courts. *See* 35 U.S.C. § 6(a) (requiring Board judges to have “competent legal knowledge and scientific ability”); Brief for the United States as Amicus Curiae Supporting Neither Party, *Teva Pharms. USA, Inc. v. Sandoz, Inc. (Teva II)*, No.13-854 (June 18, 2014), 2014 U.S. S. Ct. Briefs LEXIS 2257, at **19-40 (arguing that factual findings by district courts in construing patent claims should receive deference on appeal).

ARGUMENT

I. The Board’s Decision Is Supported by Substantial Evidence Under Any Construction of “Moisture.”

The Board correctly found Corning’s evidence insufficient to show that either the Szum coating or the Shustack coating inherently disclose “sufficient adhesion . . . to prevent delamination in the presence of moisture and during handling,” A18; A19, which the Board referred to as the claimed adhesion property. A6-7.

Just because Corning identifies the issue in this case as one of claim construction does not require this Court to review it as such. *See Teva Pharms. USA, Inc. v. Sandoz, Inc. (Teva I)*, 723 F.3d 1363, 1373-74 (Fed. Cir. 2013), *cert. granted*, 134 S. Ct. 1761 (U.S. Mar 31, 2014) (No. 13-854, 13A458)⁵ (reviewing conclusions for clear error where appellant challenged court’s use of aggregate variation as improperly construing term claiming approximate ratio of components). Indeed, Corning’s own arguments often conflate the issue of claim construction with whether

⁵ This Court’s decision in *Teva I* affirmed the judgment as to a set of claims identified as “Group II.” 723 F.3d at 1366. The petition for writ of certiorari did not seek review of this Court’s decision regarding claims for which the judgment of infringement was affirmed. *See* Petition for Writ of Certiorari, *Teva II*, No.13-854 (Jan. 16, 2014), 2014 U.S. S. Ct. Briefs LEXIS 149, at **23, n.5 (distinguishing the indefiniteness ruling appealed from the ruling on infringement and validity favoring petitioner).

specific tests are competent to show a claim limitation is inherently present in the cited references, as Corning alleges.⁶ *See* Appellant's Br. at 16, 25, 44, 46-47 (arguing Corning's test results are "relevant" to the claimed adhesion property). Yet the Board expressly found that they were not. A11, A14, A17. Corning's arguments show it is asking this Court to reweigh evidence the Board considered and found unpersuasive, which is something this Court does not do in reviewing administrative actions. *In re NTP*, 654 F.3d 1279, 1292 (Fed. Cir. 2011). Instead, because the Board's decision is supported by substantial evidence, this Court can and should affirm.

This Court may affirm the Board's decision without the need to review the Board's construction of the term "moisture." The Board identified "two independent reasons" supporting its decision. A17. While both were correct, only one of them relied on the Board's construction of "moisture." *Compare* A13-14 (finding Corning's evidence insufficient because 95% relative humidity is not "liquid water," as

⁶ Corning also alleges that the claims are indefinite (an issue not before the Board or this Court) because they do not recite a specific procedure for showing the claim is satisfied, *see* Appellant's Br. at 3-4, 27, which further demonstrates that Corning is conflating claim construction with the sufficiency of its evidence.

required by the Board's construction) *with* A14 (finding that Corning failed to prove its 95% relative humidity adhesion test measured resistance to "hydrodynamic forces that effect delamination"). Because either of these findings alone would justify the Board's decision, that decision should be affirmed if either finding is supported by substantial evidence. *See, e.g., Gartside*, 203 F.3d at 1322 (affirming decision of the Board where the Board's factual findings were supported by substantial evidence).

Moreover, Corning argues incorrectly that the Board interpreted "delamination" as limited to delamination caused by moisture. The Board did not construe "delamination" at all, *see generally* A6-A8 (construing only the term "moisture"), and it properly limited its anticipation and obviousness analyses to "delamination in the presence of moisture" because DSM's arguments focused on this limitation. *See, e.g.,* A498 ("The plain language of the claims requires that the glass adhesion be sufficiently high that delamination does not occur in the presence of moisture.").

A. The Relevance of Corning's Test Evidence Is Part of the Board's Analysis of Anticipation and Obviousness, Not Claim Construction.

The Board found that Corning failed to prove by a preponderance of the evidence that the results of a 95% RH adhesion test were probative of “delamination” in the context of the claimed adhesion property. *See* A14-17. This finding was not based on an interpretation of the claimed adhesion property that excluded Corning's test evidence, as Corning argues. *See* Appellant's Br. at 27. The only claim term in the phrase “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling” that the Board construed was “moisture.” A6-8. The Board provided two bases for its decision denying Corning's petition; one of the two bases relied on the construction of “moisture,” *see* A12-14, but the other did not. A14-17.

In connection with this second basis, the Board expressly considered Corning's test evidence, and found it insufficient to meet Corning's burden to show that the coatings Corning relied on had the ability to resist delamination caused by hydrodynamic forces. *See* A14-17 (analyzing anticipation by and obviousness over Szum); A18-19

(analyzing anticipation by and obviousness over Shustack). Accordingly, the Board did not limit the interpretation of the “delamination” limitation to require or exclude any particular test. Rather, Corning failed to prove the cited references inherently disclose the claimed adhesion property.

The purpose of claim construction is to decide the meaning of the claims, not to resolve what evidence will be sufficient to show the claims are satisfied. *See Shire Dev., LLC v. Watson Pharms., Inc.*, 746 F.3d 1326, 1333 (Fed. Cir. 2014) (applying a claim construction requiring “separation” despite ambiguity in the “degree of separation” that left a question to be resolved by the fact finder). The Board therefore did not err in declining to define the specific test or tests required to show “sufficient adhesion . . . to prevent delamination in the presence of moisture and during handling.”⁷ *See Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1352 (Fed. Cir. 2013) (holding that term “storage stable”

⁷ The Board’s decision to not resolve the question of how long a period of exposure to moisture a coating must survive without delaminating was not a construction that surviving **any** length of time would suffice, as Corning argues. *See* Appellant’s Br. at 26. Such a construction would effectively read the claimed adhesion property out of the claims entirely.

should be defined in reference to “its shelf life for its intended use” rather than to a test under the broadest reasonable interpretation).

How the Board weighs any particular evidence in evaluating what a reference discloses is part of the anticipation or obviousness analysis and reviewed as a question of fact. *See Teva I*, 723 F.3d at 1373-74; *Med. Instrumentation and Diagnostics*, 344 F.3d at 1221 (“[W]hat a reference teaches . . . is a question for the finder of fact.”). In *Teva I*, this Court reviewed a district court’s judgment that a product infringed a claim that required a copolymer comprising four components in a ratio of “approximately 6:2:5:1.” *Teva I*, 723 F.3d at 1373. This Court decided that the district court’s decision regarding the proper method for calculating variance from the “ideal” ratio of 6:2:5:1 was part of the infringement analysis and entitled to deferential review. *See id.* at 1374 (holding that the “district court did not clearly err” because there was “no basis for overturning the district court’s finding that the 6:2:5:1 ratio must be converted to percentages”).

Like the district court in *Teva I*, the Board made findings of fact regarding what evidence was sufficient to show that a claim term was satisfied. *See* A14-19. And, like the district court in *Teva I*, the Board

is entitled to deferential review. *See, e.g., Gartside*, 203 F.3d at 1313-14.

B. Substantial Evidence Supports The Board's Finding That Corning's Peel Test Results Did Not Show Resistance to Hydrodynamic or Hydrolytic Forces That Cause Delamination.

Substantial evidence, including testimony from both DSM's expert and Corning's, supports the Board's decision rejecting Corning's argument that its peel test results were relevant to establish that prior art coatings inherently disclose the claimed adhesion limitation. *See Noelle v. Lederman*, 355 F.3d 1343, 1353 (Fed. Cir. 2004) (affirming Board decision based on expert testimony as supported by substantial evidence). More specifically, the Board found, independently of its construction of "moisture," Corning's evidence unpersuasive and lacking objective support to show whether a coating will resist hydrodynamic forces that cause delamination. A14-17.

The record evidence shows that delamination can occur when coatings are exposed to water that can break down the adhesion between the inner primary coating and the surface of the glass in a

process called hydrolysis.⁸ A999-1000 ¶ 71; A3653 ¶¶ 52-53. Coatings also can be forcibly removed from a glass substrate. *See, e.g.*, A3426 at 459:16-24. While it is possible to evaluate a coating's resistance to delamination from hydrolysis, on the one hand, and to mechanical forces, on the other, there are different tests for doing so.

A water soak delamination test may be used to evaluate “the ability of a coating to delaminate from a substrate when the film is exposed to water.” A3426 at 460:5-11. Water soak delamination tests are performed without applying any “additional forces . . . to the film, mechanical forces.” A3426 at 459:13-14. Accordingly, in a water soak delamination test, water alone is responsible for causing delaminations. *See* A3651 at ¶ 49 (explaining that samples soaked in water are checked for delaminations); A3284 at 58:9-14, A3424 at 452:8-19 (explaining that water immersion testing, also called water delamination testing, involves submerging a sample in water, then removing it and examining it for delaminations), A3425 at 453:11-454:23 (explaining

⁸ The process of delamination resulting from chemical forces due to exposure to water is called “hydrolysis.” *See, e.g.*, A3652 ¶ 51 (“[T]he results of a 60° C water soak delamination test are largely determined by the resistance of the adhesive bonds to hydrolysis.”).

that the sample could completely delaminate, partially delaminate, or not delaminate at all).

In contrast to a water soak delamination test, “a peel test measures the resistance of [the coating-glass] bonds to a mechanical force applied to the coating.” A3654 at ¶ 53. In a peel test, “one is applying . . . a mechanical force to a film and pulling the film off a substrate.” A3426 at 459:16-18. The test Corning performed and relied on in this and other related *inter partes* review proceedings was a “peel test.” See A3284 at 58:22-59:12 (equating a high humidity peel test with the “wet adhesion test related to the IPRs here”); A3431 at 479:23-480:13 (admitting the results relied on were measured by a peel test).

These two tests not only have different procedures, they measure different properties of coating compositions tested. As Corning’s own witness, Dr. Winningham, admitted, “those tests . . . are looking at different things or measuring different things.” A3426 at 460:17-19, 21. And he also admitted that one could not accurately predict the results of a water soak delamination test based on a given result in a peel test. See *id.* at 460:22-25.

A “reasonable mind” could easily accept the foregoing evidence as “adequate” to conclude that Corning’s evidence of its peel test results did not establish that Szum or Shustack inherently disclose “sufficient to prevent delamination in the presence of moisture,” and the Board’s decision is supported by substantial evidence. *Gartside*, 203 F.3d at 1312 (internal citations and quotation marks omitted).

Moreover, the Board correctly decided not to credit Corning’s petition evidence because it had no “objective proof” that the peel test results Corning obtained would have established that coatings disclosed in the Szum or Shustack references inherently possess “sufficient adhesion to prevent delamination in the presence of moisture and during handling.” A14 (citing A154-55; A1007 ¶ 88). The lack of such objective proof supports the Board’s determination. *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (finding lack of factual support for expert opinion “may render the testimony of little probative value in a validity determination”).

By insisting that its test results are relevant because the 95% RH adhesion test includes “adhesion,” “moisture,” and “handling,” *see, e.g.*, Appellant’s Br. at 27, Corning fails to confront the critical finding of the

Board—Corning’s 95% RH adhesion test did not evaluate for delamination, which is a necessary part of the claimed adhesion property. *See* A14-17.

In its Brief, Corning cites to testimony in a reply declaration from Dr. Winningham about the supposed relevance of Corning’s peel test results to preventing delamination in the presence of moisture. Appellant’s Br. at 25 (citing A2105 ¶19). The cited portion of Dr. Winningham’s declaration does not add any objective proof supporting this fact. Moreover, the Board credited and relied on Dr. Winningham’s contrary deposition testimony that a peel test measures mechanical forces and that a water soak delamination test is a “different test[]” that measures a “different thing[].” A15.

Corning also cites to Table 3 of the ’666 patent in its Brief, and urges this Court to consider the argument that the Board correctly deemed waived. *See* Appellant’s Br. at 25-26. The Board’s rules and regulations include a restriction that “[n]o new evidence or arguments may be presented at the oral argument.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48768 (Aug. 14, 2012). Because the legislature explicitly delegated authority to the Director to prescribe

regulations governing *inter partes* review and providing a right to oral argument, *see* 35 U.S.C. § 316(a)(4), (10), the Board's regulation controls "unless [it is] arbitrary, capricious, or manifestly contrary to the statute." *Chevron USA Inc. v. Natural Res. Defense Council, Inc.*, 467 U.S. 837, 843-44 (1984). The Board's regulation prohibiting new argument after the close of briefing is hardly arbitrary or capricious; this Court has similar precedent regarding arguments not raised in an opening brief, as the Board noted. *See* A16 (citing *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1320-21 n.3 (Fed. Cir. 2005)). Because Corning waived its "Table 3" argument before the Board, this Court need not consider it.

In any event, even after finding waiver, the Board considered Corning's argument relating to Table 3 and rejected it as unpersuasive. A16. Corning did not present "convincing, objective evidence" to explain the asserted relationship between the peel test results, measured in "grams-per-inch mechanical force," and the water soak delamination test, "reported as an observation," and the Board found this lack of evidence fatal. *Id.*

Corning's reliance on the fact that Dr. Taylor referred to Table 3 in his declaration, *see* Appellant's Br. at 25-26, is misplaced. Dr. Taylor cited Table 3 to rebut testimony in Dr. Winningham's declaration about what the '666 patent disclosed. A3673-74 ¶ 92. Dr. Taylor did not need to draw any inferences from Table 3 about whether Szum Example 5B would delaminate in less than 24 hours because he knew from DSM's testing that it would. *See* A3659-60 ¶¶ 66-69.

As demonstrated here, the Board's finding that the cited references do not inherently disclose "sufficient adhesion . . . to prevent delamination in the presence of moisture and during handling" is supported by substantial evidence and its denial of Corning's petition should therefore be affirmed.

C. The Board's Decision Correctly Focused on Delamination Caused by Hydrodynamic Forces.

In reaching its decision, the Board focused on whether Corning's test evidence could show "an ability to withstand the hydrodynamic forces that effect delamination." A14. This focus was proper because the only limitation that was in dispute was "sufficient adhesion . . . to prevent delamination in the presence of moisture." *Cf. Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1481 (Fed. Cir. 1998)

(finding no error in a district court's decision not to address validity when its judgment of noninfringement resolved the dispute).

In doing so, the Board did not assume "delamination" only resulted from "moisture," as Corning argues. In its Patent Owner's Response, DSM argued that Corning's evidence was insufficient to show this limitation was met because the claims require, in relevant part, that "the glass adhesion be sufficiently high that delamination does not occur in the presence of moisture." A498; A507. The Board agreed. A14. Because the dispute before the Board did not focus on whether the cited references disclose a coating that would delaminate during handling, the Board did not need to resolve it. *Cf. Multiform Desiccants*, 133 F.3d at 1481.

Accordingly, Corning's sole argument on the issue fails to address the Board's finding that the 95% RH peel test did not "correspond to an ability to withstand the hydrodynamic forces that effect delamination." A14. It is irrelevant that "the specification . . . makes clear that 'delamination' may occur in the . . . absence of 'moisture,'" Appellant's Br. at 43 (emphasis added), because the claims recite a coating that

does not delaminate in the “**presence** of moisture.” A70-71 at col. 68:2-4, 43-45 (emphasis added).

Corning misconstrues both DSM’s position and the Board’s decision by suggesting that either DSM or the Board assumed that the water soak delamination test was the only test for assessing delamination under any circumstances. *See* Appellant’s Br. at 42. DSM argued, based on expert testimony, that the claims required that a coating would not delaminate as a result of exposure to liquid water (as would be shown by a water soak delamination test), but DSM did not argue that such a test would necessarily satisfy the entire “delamination” limitation, including the “handling” condition.⁹ *See* A498 (“Any construction of this phrase that **does not include** this requirement is unreasonably broad.”) (emphasis added); A500 (arguing that the claim language “requires **at least** a ‘no delamination’ result in a water soak test”) (emphasis added); A3650 ¶ 46 (testifying that the claims do not “only” require a wet adhesion test, but “also” require evaluating for delamination using a water soak test); A869-70 at 26:4-

⁹ Corning incorrectly asserts that DSM “abandoned” one position in favor of another. Appellant’s Br. at 42. DSM’s position was consistent throughout the proceedings. *See* A498, A500 (arguments in Patent Owner’s Response); A869-70 (arguments at oral hearing).

27:8 (arguing, at oral hearing, the claims require two tests for two different properties, resistance to both hydrolytic—also referred to as “hydrodynamic”—and mechanical forces). Similarly, despite acknowledging that the peel test method employed by Corning “assesses [a] mechanical force required to peel a cured coating away from a glass substrate,” the Board limited its decision to whether Corning’s test results showed “an ability to withstand the hydrodynamic forces that effect delamination.” A11, A14.

In addition, the Board did not, as Corning suggests, “find[] that the water soak test is the only valid method to measure delamination.” Appellant’s Br. 46. Instead, the Board found that the water soak delamination test was one method to “assess[] the ability of a cured coating to withstand the hydrodynamic forces that cause delamination,” while the method Corning employed was not. A12, A14.

Corning complains about this finding, but does not assert that it is unsupported by substantial evidence. *See* Appellant’s Br. at 46. Instead, Corning argues that it is inconsistent with claim language, *see id.*, but in doing so, Corning itself misquotes the claim language. The claims do not, as Corning states, recite “how delamination of the coating

occurs in response to both ‘exposure to moisture [and] handling.’” *Id.* (emphasis removed; alteration in original). The claims recite “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture and during handling.” A70 at col. 68:2-4, 43-45 (claims 1 and 10) (underlining and italics added).

As recited in the claims of the ’666 patent, the “moisture” and “handling” conditions are set forth in separate phrases—“in the presence of moisture” and “during handling.” The claimed adhesion property thus requires that the adhesion of a coating prevent delamination “during handling,” regardless of whether moisture is present, and “in the presence of moisture,” without regard to handling. *Cf. Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*) (“[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms.”). The Board’s decision to focus on delamination caused by hydrodynamic forces was therefore both reasonable and entirely consistent with the claim language, and Corning’s arguments to the contrary are unavailing.

II. The Board's Other Basis for Its Decision Is Based on Substantial Evidence and the Broadest Reasonable Interpretation of the Term "Moisture."

As noted above, the Board had two independent bases that support its finding that the Szum and Shustack references do not inherently disclose the claimed adhesion property. In addition to the reasons discussed above, the Board found that Corning failed to prove either Szum or Shustack inherently disclose coatings satisfying the claimed adhesion property based on its construction of "moisture" to mean "liquid water." As the Board noted, its construction led to a "dispositive question . . . : Does Corning show by a preponderance of the evidence that the Szum coating exhibits sufficient adhesion to prevent delamination from glass in the presence of liquid water?" A10; *see* A18-19 (finding Shustack did not inherently disclose the claimed adhesion property for the same reasons as Szum). Because Corning only tested coatings after exposing them to 95% relative humidity, not liquid water, the Board answered this question in the negative. *See* A12-14; A18-19.

The Board's finding in this regard is supported by substantial evidence. Also, it correctly determined the broadest reasonable interpretation of "moisture" is "liquid water" because that construction

is consistent with the ordinary and customary meaning to a person of ordinary skill in the art in view of the specification. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Corning does not challenge the sufficiency of the evidence supporting the Board's findings of fact. Corning only challenges the Board's construction of "moisture." Because that construction is correct, the Board's decision denying Corning's petition should be affirmed.

A. The Board Construed "Moisture" to Mean "Liquid Water," But Did Not Require Immersion in Liquid Water.

The Board correctly construed the term "moisture" to mean "liquid water," A8, but it did not, as Corning argues, require immersion in liquid water. Indeed, the Board expressly "decline[d] to resolve what . . . exposure to liquid water the coating must endure, without delaminating, in order to satisfy the claimed adhesion property." *Id.* Corning's repeated reliance on this supposed narrowing aspect of the Board's decision, *see* Appellant's Br. at 31, 32, 33, 35, 38, is therefore mistaken.

B. The Board Correctly Construed “Moisture” in View of the Specification of the ’666 Patent.

The intrinsic evidence supports the Board’s construction of “moisture,” as read in the context of the claim limitation “sufficient adhesion . . . to prevent delamination in the presence of moisture,” to mean “liquid water.” At the very least, the ’666 patent uses “moisture” as distinct from “humidity,” which Corning incorrectly asserts is encompassed within the ordinary meaning of “moisture.” *See* Appellant’s Br. at 32.

First, the purpose of the invention suggests that the claims are concerned with preventing delamination in the presence of liquid water. The ’666 patent notes the importance of preventing “[d]elamination of the inner primary coating from the optical glass fiber” because such delamination “can lead to degraded strength of the optical glass fiber as well as signal transmission attenuation disadvantages.” A37 at col. 2:54-57. The specification also notes that, for some prior art coatings that strive for “easy removal” of the primary coating, the possibility of “undesirable delamination” is especially high “in the presence of moisture.” *Id.* at col. 2:44-53.

The patent teaches that “[t]he novel ribbon assembly made according to this invention can be advantageously used in various telecommunication systems.” A70 at col. 67:13-15. As part of such systems, “[t]he ribbon assembly can be **buried under ground or water** for long distance connections, such as between cities.” *Id.* at col. 67:20-22 (emphasis added). It was known to persons skilled in the art that the invention must be capable of being deployed under water, or otherwise exposed to extreme environmental conditions. *Id.*; *see also* A3640 ¶ 25 (testifying that installed coated optical fibers “would need to survive” exposure to “all weather and all seasons in all manner of climates,” being “immersed in water for extended periods of time,” and being “exposed to wind and weather”). Corning has not argued otherwise.

The Board properly found that the use to which the invention would be put supports the conclusion that the any reasonable construction of “sufficient adhesion . . . to prevent delamination in the presence of moisture” requires a composition to resist delamination in the presence of liquid water. *See Leo Pharm. Prods.*, 726 F.3d at 1352 (construing “storage stable,” in part, by reference to the “shelf life” of

the claimed combination composition “for its intended use”). *Accord* A8. Corning faults the Board for not considering evidence regarding the effect of “matrix material” and “cable jacketing or sheathing” in its analysis, *see* Appellant’s Br. at 41, but Corning can identify no such evidence presented to the Board, *see id.* at 40-41, because there was none.

Consistent with the need for the invention to prevent delamination under severe conditions that include prolonged exposure to liquid water, the ’666 patent describes demonstrating the “resistance to delamination” of coatings by subjecting them to a water soak delamination test.¹⁰ *See* A50 at col. 27:19-47. *Accord* A12. Delamination results are reported based on how long it takes for delamination, if any, to appear. *See* A50-51, col. 28:15-19, 29:53-58. *Accord* A12. The specification also describes the coatings that perform well as having “hydrolytic interfacial adhesion.” *See* A50 at col. 28:39. This disclosure further supports the Board’s conclusion that “sufficient adhesion . . . to prevent delamination in the presence of moisture” refers

¹⁰ As noted in the Statement of Facts, above, the water soak delamination test evaluates resistance to delamination by submerging a sample of a cured coating composition in a water bath and examining the samples for delamination over time. *See* A50 at col. 27:32-47.

to the coating's ability to resist delamination in the presence of "liquid water."

The Board also properly analyzed how the specification used the term "moisture," and reached the correct conclusion that the ordinary and customary meaning of moisture in view of the specification is "liquid water." As the Board noted, the '666 patent's use of the term "moisture" suggests that it refers to "liquid water." A7. For example, in describing samples being prepared for an "Elastic Modulus Test Method," *see generally* A53-54 at col. 34:65-35:30, the '666 patent describes the sample being subjected to high heat under a nitrogen atmosphere to remove "moisture." A54 at col. 35:24-27. The Board found that the application of high heat in this context "suggest[s] removal of liquid water," A7, such as by evaporation. Similarly, the '666 patent describes "retain[ing] moisture" in a film of cured coating composition having been prepared for the 95% RH adhesion test by applying a "layer of polyethylene wax/water slurry . . . to the surface of the . . . film." A51 at col. 29:5-7. The Board found this also suggested liquid water was being "retained" by the wax/water slurry, A7, such as by preventing evaporation. The fact that the coating samples described

in these procedures may be capable of absorbing water under humidity conditions where water would not condense on its own, *see* A3651 ¶ 48 (contrasting 95% and 100% relative humidity), does not, as Corning suggests, cause the condition of 95% relative humidity (or ambient humidity) to become “moisture.” *See* Appellant’s Br. at 36-38.

Neither of these two test procedures use the term “moisture” to refer to water vapor or humidity. Instead, the ’666 patent uses the word “humidity” to discuss water vapor or humidity. In describing test conditions for different test methods, the ’666 patent specifies relative humidity conditions for the test or sample preparation. *See* A50-51 at col. 28:57-29:5 (describing 50% relative humidity and 95% relative humidity conditioning); A53 at col. 33:45-47 (describing 50% relative humidity conditioning); *id.* at col. 34:37-42 (describing a controlled 50% relative humidity environment for conducting testing).

Corning, in an argument raised for the first time on appeal, focuses on a reference in the specification to “atmospheric moisture” causing hydrolysis of a “-Si-O-R’ linkage . . . in [a] glass coupling moiety to facilitate coupling to the surface of the optical glass fiber.” A47 at col. 21:46-48, 53-54. Corning argues that this reference to “atmospheric

moisture” causing hydrolysis makes a distinction between “water” and “atmospheric moisture,” and that this distinction is relevant to whether “moisture” means “liquid water.” Appellant’s Br. at 39-40. That untimely argument relies on a false distinction. In the same passage where the phrase “atmospheric moisture” appears, the ’666 patent explains that hydrolysis of the “-Si-O-R’ linkage” occurs because the “linkage is sensitive to reaction with water to generate ‘-SiOH’ linkages.” A47 at col. 21:49-51. In this context, “water” refers to the molecule that chemically reacts during hydrolysis, not specifically to liquid water. Moreover, even assuming the reference to “atmospheric moisture” could encompass conditions of high humidity,¹¹ the fact that the ’666 patent distinguishes “atmospheric moisture” from “moisture” supports the construction that “moisture” is, by default, not atmospheric. *Accord* A7-8.

¹¹ This assumption is not necessarily warranted, since “atmospheric moisture” is as likely to refer to conditions of 100% relative humidity, when water is beginning to condense. A3651 ¶ 48.

C. The Extrinsic Evidence Is Consistent with and Further Supports the Construction of “Moisture” to Mean “Liquid Water.”

The extrinsic evidence supports the conclusion that the ordinary and customary meaning of “moisture” refers to liquid water. Dr. Taylor testified that “[a] person of ordinary skill in the art would understand the phrase ‘in the presence of moisture’ to refer to the fiber being exposed to liquid water.” A3650 ¶ 47. Dr. Winningham, Corning’s employee expert, used the word “moisture” in the same way, further demonstrating that its ordinary meaning to one of skill in the art refers to liquid water:

Q. What does a wet pullout test refer to?

A. A wet pullout test refers to a fiber sample that has been exposed to moisture

Q. When you say “exposed to moisture,” what do you mean?

A. I believe fibers – I’m going on recollection -- I believe **the fibers are soaked in water.**

A3422 at 443:10-20 (emphasis added). This further supports the Board’s conclusion that the ordinary and customary meaning of the phrase “sufficient adhesion to said glass fiber to prevent delamination in the presence of moisture” requires exposure to liquid water. A7-8.

The only extrinsic evidence of record Corning finds to argue in support of its position is deposition testimony from Dr. Taylor about an article that, itself, is not in the record. A849 at 6:1-12. Corning's counsel asked Dr. Taylor about the choice of a single word in that article, even though Dr. Taylor's contributions were limited to managing a group to which three of the authors belonged and helping interpret data. A1714 at 474:18-21; A1715 at 478:16-20. In fact, Dr. Taylor admitted that he may not have written any of the article. A1715 at 478:13-15. Nevertheless, Corning's counsel asked Dr. Taylor about language in the article that Dr. Taylor testified he did not write and would not have used. A1715 at 477:3-7, 478:8-12; A1716 at 479:11-17. Given Dr. Taylor's limited involvement in the article and the fact that it was not evidence of record, his testimony about it has no probative value, and the Board did not need to give it any weight.¹²

¹² Corning also implies that Dr. Taylor was an interested party. He was not; he was an independent, retained expert. See A3630 ("My compensation is not in any way dependent on the opinions I set forth herein or the outcome of any of these proceedings.").

D. Corning's Attempt to Introduce Dictionary Definitions Is Untimely and Unhelpful to Its Case.

The intrinsic and extrinsic evidence supports the Board's conclusion that the ordinary meaning of "in the presence of moisture," in the context of the '666 patent, involves exposure to liquid water. A8. Against this evidence, Corning offers **for the first time** extrinsic evidence in the form of general purpose dictionary definitions that were never part of the record before the Board.

Corning's reliance on its newly offered dictionary definitions is untimely. The dictionaries Corning cites were not presented to the Board, were never part of any argument before the Board, and are not part of the record on appeal. This Court has said that its "review is confined to the record on appeal." *Jaskot v. Principi*, 58 F. App'x 839, 841 (Fed. Cir. 2002) (citing *Hayes v. Dep't of the Navy*, 727 F.2d 1535, 1537 (Fed. Cir. 1984)). And Corning may not raise new arguments on appeal without showing justification, *see, e.g., L.E.A. Dynatech, Inc. v. Allina*, 49 F.3d 1527, 1531 (Fed. Cir. 1995), which Corning has not shown.

Even if this Court considers Corning's belated dictionary definitions, they do not support Corning's position. As general purpose

dictionary definitions, they are of limited value in trying to identify how a person of ordinary skill in the art would understand “moisture” in the context of the ’666 patent. *See Phillips*, 415 F.3d at 1314 (explaining that general purpose dictionaries are not helpful in many cases involving terms that have a particular meaning in the field).

More reliable sources of information include “the remainder of the specification . . . and extrinsic evidence concerning . . . the meaning of technical terms, and the state of the art.” *Id.* All of these were before the Board, and all of them supported the Board’s construction. Dr. Taylor explained the state of the art, which included the fact that coated optical fibers were exposed to the elements, including submersion in water, would not be regularly maintained, and were expected to survive these conditions. A3640 ¶ 25. During his deposition, when Dr. Winningham used the phrase “exposed to moisture” in reference to a “pullout test” performed on optical fibers, he explained that he meant “soaked in water.” A3422 at 443:10-20. And the specification, as noted above, supports the Board’s construction because the only test disclosed as “test[ing] for resistance to

delamination” involves exposing cured coatings to liquid water. A50 at col. 27:29-46.

In any event, Corning’s definition of “moisture” indicates that “moisture” refers to a “liquid.” Appellant’s Br. at 34 (quoting Webster’s Third New International Dictionary of the English Language Unabridged 1453-54 (2002)). So even considering Corning’s dictionary definitions, they support the Board’s construction, not Corning’s.

III. Corning Draws Improper Inferences From the Record, and Those Inferences Should Be Ignored.

In addition to the unavailing arguments addressed above, Corning draws unsupported inferences from decisions DSM made during the successful defense of its patent before the Board. First, Corning infers that DSM conceded claims 1 and 10 for reasons relating to the claim construction arguments in this appeal. *See, e.g.*, Appellant’s Br. at 21. Such an inference is unwarranted and unsupported by the record. And second, Corning incorrectly imputes significance to the omission of DSM’s claim construction arguments from its preliminary response. *See id.* at 30.

Regarding DSM’s decision to file a non-contingent motion to amend, that decision has no bearing on DSM’s claim construction

position. DSM conceded claims 1 and 10 (and has since disclaimed those and other claims). Before the Board, however, DSM argued that Corning failed to meet its burden to show unpatentability of claims depending from claims 1 and 10 based on Corning's failure to show the cited references inherently disclose the claimed adhesion property. *E.g.*, A870-71. The inference Corning draws is therefore unwarranted.

As for Corning imputing significance to the omission of arguments from DSM's preliminary response, Corning cites no authority for the proposition that such an omission has any legal effect whatsoever. *See generally* Appellant's Br. at 30. To the contrary, a preliminary response is an "optional" pleading for a patent owner in an *inter partes* review. Rules of Practice for Trials Before the Patent Trial and Appeal Board and Judicial Review of Patent Trial and Appeal Board Decisions, 77 Fed. Reg. 48612, 48654 (Aug. 14, 2012); *see* 35 U.S.C. § 313 (ensuring patent owner's "the right to file a preliminary response"); § 314(b), (b)(2) (contemplating circumstances when the Board would not institute, despite the absence of a preliminary response). Because a patent owner is not required to file a preliminary response at all, failure to raise an argument in a preliminary response cannot have any significance. *See*

77 Fed. Reg. 48756, 48764 (“No adverse inference will be taken by . . . an election [to waive the preliminary patent owner’s response].”); *see also* 77 Fed. Reg. 48612, 48634 (“[A] patent owner’s preliminary response and a patent owner’s response are not ordinarily expected to address the exact same issues.”).

IV. The Board’s Decision Regarding Claims 19 and 20 Is Supported By Alternative Grounds.

The Board’s decision to deny Corning’s petition to cancel claims 19 and 20 also may be affirmed based on the alternate ground that Corning failed to prove that the cited references inherently disclose the limitation, “wherein the ratio of the change in length of said inner primary coating to the change in length of said outer primary coating is less than 2 when said coatings are heated from 25° C. to stripping temperature” (the “dL/L limitation”), which both claims 19 and 20 recite. In a co-pending, companion case, the Board found Corning’s evidence was insufficient to show Szum and Shustack (alone or in combination) inherently disclose the dL/L limitation. *See Corning Inc. v. DSM IP Assets B.V.*, IPR2013-00048, 2014 WL 1917395, at *28-29 (P.T.A.B. May 9, 2014) (“*Corning IPR 48*”).

The evidence relating to the dL/L limitation that Corning relies on in this case was identical to evidence presented and found insufficient in IPR2013-00048. *See* A1092-94 ¶¶ 46-50 (Ms. Kouzmina describing Corning’s dL/L testing); A1001-1004 ¶¶ 75-79 (Dr. Winningham relying on Ms. Kouzmina’s declaration); A2959-65 at 114:6-137:10 (Ms. Kouzmina testifying at deposition regarding dL/L testing); A3660-69 ¶¶ 70-85 (Dr. Taylor explaining the unreliability of Corning’s dL/L testing); A3674-75 ¶¶ 95-98 (Dr. Taylor testifying that Corning failed to prove unpatentability of claims 19 and 20 based on Szum); A3685-87 ¶¶ 122-125 (Dr. Taylor testifying that Corning failed to prove unpatentability of claims 19 and 20 based on Shustack); A1283-89 ¶¶ 78-90 (Dr. Ju testifying in response to Dr. Taylor’s declaration); A4418-19 at 13:17-19:21 (Dr. Ju testifying at deposition regarding the basis for his declaration testimony on dL/L); *Corning IPR 48*, 2014 WL 1917395, at *25-29. And Corning addressed the arguments relating to the dL/L limitations in oral argument in this case. A853-58. Accordingly, affirming on these grounds “does not depend upon making a determination of fact not previously made by the [Board],” and is therefore appropriate. *In re Comiskey*, 554 F.3d 967, 974 (2009)

(quoting *Killip v. Office of Pers. Mgmt.*, 991 F.2d 1564, 1568-69 (Fed. Cir.1993)) (italics removed).

V. Corning's Argument Regarding Claims 1 and 10 Is Moot.

The Board acted within its discretion by denying DSM's non-contingent motion to amend claims 1 and 10 without prejudice once it found that Corning failed to meet its burden to show unpatentability. Regardless, this issue became moot when DSM filed a statutory disclaimer disclaiming claims 1-3, 8, 10-12, and 16-18, pursuant to 35 U.S.C. § 253(a) on October 15, 2014.¹³ Corning's argument that the Board erred by not cancelling those claims is moot because a ruling of this Court on those arguments will have no legal effect on the rights of the parties. *See N. Carolina v. Rice*, 404 U.S. 244, 246 (1971) (“[F]ederal courts are without power to decide questions that cannot affect the rights of litigants in the case before them.”).

¹³ The disclaimer is a public record of the U.S. Patent and Trademark Office, and can be viewed in the image file wrapper of the '666 patent. In addition, counsel for DSM has been informed that the notice of disclaimer will be published in the January 6, 2015, issue of the Official Gazette. This Court may take judicial notice of the disclaimer. *See Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 897 F.2d 511, 514 n.3 (Fed. Cir. 1990) (finding it appropriate to take judicial notice of USPTO correspondence that is part of patent file history).

The Board acted within its authority when it denied DSM's motion to amend "without prejudice to the filing of a disclaimer." A20. After instituting an *inter partes* review, the Board is required to enter a final written decision that addresses challenged claims and any proposed new claim. 35 U.S.C. § 318(a). In doing so, "[t]he Board may take up petitions or motions for decisions in any order, may grant, deny, or dismiss any petition or motion, and may enter any appropriate order." 37 C.F.R. § 42.71. Under the Board's interpretation of this rule—and of the word "deny," in particular—"a motion to amend may be denied, without prejudice, if it is determined that patent owner's original claims are patentable." 77 Fed. Reg. 48756, 48767. Because this interpretation is neither plainly erroneous nor inconsistent with other regulations governing trial proceedings before the Board, it is entitled to controlling weight. *Smith v. Nicholson*, 451 F.3d 1344, 1350 (Fed. Cir. 2006) (citing *Bowles v. Seminole Rock & Sand Co.*, 325 U.S. 410, 414 (1945)).

The Board opted to "take up" Corning's petition before addressing DSM's motion to amend. *See generally* A9-A20 (addressing asserted grounds of unpatentability before addressing DSM's motion to amend).

The Board found that Corning failed to meet its burden of proving, by a preponderance of the evidence, that DSM's original claims 1 and 10 were unpatentable. A21. Having come to this conclusion, the Board then decided to deny DSM's motion to amend without prejudice, which it is permitted to do when the original claims are not found to be unpatentable.

In support of its argument, Corning also cites several Board decisions in which claims were cancelled when a patent owner filed a non-contingent motion to amend, none of which involve analogous facts to this case. In each of those cases, the patent owner either (1) filed a motion to cancel claims without proposing substitute claims or (2) did not present any arguments in a Patent Owner's Response to defend any of the original claims. Here, DSM's Patent Owner Response presented arguments that applied equally to all original claims, and the Board addressed those arguments first.

CONCLUSION

For the reasons set forth herein, the Board's decision denying Corning's petition to cancel claims 4-7, 9, 13-15, and 19-20 of the '666

patent should be affirmed, and Corning's appeal with respect to claims 1-3, 8, 10-12, and 16-18 should be dismissed as moot.

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CERTIFICATE OF SERVICE

I, Sharon A. Israel, hereby certify that on December 22, 2014, I served a copy of the foregoing Brief of Appellee DSM IP Assets B.V. via the Court's electronic filing system to:

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CERTIFICATE OF COMPLIANCE

Pursuant to Federal Rule of Appellate Procedure 32(a)(7)(C), I hereby certify on this 22nd day of December, 2014, that the foregoing Brief of Appellee DSM IP Assets B.V. complies with the relevant type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B). This brief is typed in Century Schoolbook (14 point) and contains 11,998 words according to the Microsoft Word 2010 system used to prepare it, excluding those items exempted by the Federal Rule of Appellate Procedure 32(a)(7)(B)(iii) and Federal Circuit Rule 32(b).

Dated: December 22, 2014

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